Final Report Form 3400-189 (rev. 7/30/09)

- Targeted Runoff Management Grant Program (ch. NR 153)
- Notice of Discharge Program (ch. NR 153)
- Urban Nonpoint Source & Storm Water Management Grant Program (ch. NR 155)

NOTICE: This Final Report is authorized under ss. 281.65 and 281.66., Wis. Stats., and chs. NR 153 and NR 155, Wis. Admin. Code. Personally identified information collected will be used for program administration and may be made available to requesters as required under Wisconsin Open Records Law [ss. 19.31-19.39, Wis. Stats.].

INSTRUCTIONS: Your grant agreement requires you to submit a Final Report with your final reimbursement request. This Final Report form must be used in conjunction with the "FINAL REPORT INSTRUCTIONS." The instructions detail how to complete and submit the report to DNR as described in the instructions.

1. GRANT TYPE. Check the one that applies.							
☐ Targeted Runoff Managemer	nt Grant – Agricultural		☐ Targeted Runoff Management Grant – Urban				
☐ Urban Nonpoint Source & Storm Water Management Grant – Construction			☐ Urban Nonpoint Source & Storm Water Management Grant – Planning				
☐ Notice of Discharge Grant	☐ Notice of Discharge Grant						
2. PROJECT NAME & LO	OCATION.						
2.1. Project Name:			2.2. Grant Number:				
Fire Lane Dr. Water Quality Pond			USC-LF01-05106-11A Amend. #1				
2.3. Governmental Unit Name:			2.4. Primary Watershed Name: 2.5. Watershed Code:				d Code:
Bellevue, Village			East R	iver		LF01	
NOTE FOR SECTION 2.6 (whic	h follows):						
Section 2.6. includes five (5) columns (A. through E.) for recording data about five (5) discrete site locations. If your grant has more than five (5) discrete project locations, attach additional columns for Section 2.6 as described in the instructions. If your project occurs in more than one 12-digit Hydrologic Unit Code (HUC), use the space in adjacent columns to record other HUC numbers.							
2.6 Site Location(s) →	A.	B.		C.		D.	E.
Name of Cost-Share Recipient or Governmental Unit	Bellevue, Village						
Cost-Share Agreement Number (Agricultural only)							
12-Digit Hydrologic Unit Code(s) (HUC) Where Work Was Completed	040302040302						
Nearest Surface Receiving Water Affected							
Name:	Willow Creek						
Waterbody Identification Code(s) (WBIC):	118300						
Nearest Impaired Water Affected							
Name:	East River						
Waterbody Identification Code(s) (WBIC): 118000							
Pollutants Reduced	TSS						
Impairments/Impacts Addressed	TSS						

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Project Location(s) (cont.) →	A.	В.	C.	D.	E.
Project Coordinates:					
Town	23				
Range	21				
Section	18				
Quarter	PC49				
Quarter-Quarter					
Latitude (degrees, minutes, seconds North of Equator; use the DNR's Surface Water Data Viewer (SWDV))	44-28-20N				
Longitude (degrees, minutes, seconds W of Prime Meridian, use the SWDV)	87-59-26W				

ble A. Agricultural Projects. – Ch. NR	151 Performance Standards an	d Prohibitions and Other Water	Resources Management Priorities
Management Measures	Units of Measure	Quantity	Measurement Method Used
Sheet, rill and wind erosion	Acres meeting "T"	acres	
Manure Storage Facilities: New Construction/Alterations	Number of facilities	facilities	
	Number of animal units	animal units	
Manure Storage Facilities: Closure	Number of facilities	facilities	
Manure Storage Facilities:	Number of facilities	facilities	
Failing/Leaking Facilities	Number of animal units	animal units	
Clean Water Diversions in WQMA	Pollutant load reduction	lbs.	
	Number of farms with diversions	farms	
	Number animal units	animal units	
Nutrient Management on Agricultural Land	Acres planned	acres	
B 177 W	Number of farms	farms	
Prohibition: Manure Storage Overflow	Number of animal units	animal units	
Prohibition: Unconfined Manure Pile in WQMA	Number of farms	farms	
	Pollutant load reduction	lbs.	
Prohibition: Direct Runoff From Feedlot/Stored Manure	Number of facilities	facilities	
	Number of animal units	animal units	
Darbitation Halfarinal Livers J. A.	Feet of bank protected	feet	
Prohibition: Unlimited Livestock Access	Number of farms	farms	

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- Urban Nonpoint Source & Storm Water Management Grant Program (ch. NR 155)

	Units of Measure	Quantity	Measurement Method Used
Streambank & Shoreline Protection	Units (use feet, acres or number as applicable)		
	Pollutant load reduction (if method available)		
Other:	Units (use feet, acres or number as applicable)		
	Pollutant load reduction (if method available)		
Other:	Units (use feet, acres or number as applicable) Pollutant load reduction (if		
	method available)		
Other:	Units (use feet, acres or number as applicable)		
	Pollutant load reduction (if method available)		
able B. Urban Construction Projects S	Serving Developed Areas.		
Required Management Measures	Units of Measure	Quantity	Measurement Method Used
20-40% Total Suspended Solids (TSS)	TSS reduced	10304 lbs.	SLAMM
Reduction for NR 216 communities	TSS reduction	78 %	SLAMM
Other Management Measures			
20-40% Reduction in TSS for	TSS reduced	lbs.	
non-NR 216 communities	TSS reduction	%	
Infiltration	Pre-development stay-on volume	%	
	Stay-on volume	ft³/year	
Peak flow discharge for 2 year/24 hour design storm	Change in cubic feet per second for design year	ft³/sec	
Protective areas	Bank protected	feet	
Fueling & maintenance areas	Oily sheen presence reduced	☐Yes ☐ No	
	Bank erosion reduced	tons	
Streambank & Shoreline Protection		feet	
Streambank & Shoreline Protection	Bank protected	ieet	
Streambank & Shoreline Protection Other:	Pollutant load reduction (if method available)	ieet	

Existing Developed Urban Areas

C.2. Estimate total acres covered by the

Total Acres

New Development

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planning product:	acres	acres	acres
C.3. Products developed (check all below that apply)	Identify	Documents by Name (if applic	able)
Storm Water Plan			
Construction or Erosion Ordinances			
Post-construction Storm Water Ordinances			
Other Types of Storm Water Quality Ordinances			
Financing Methods: identified and evaluated			
Financing Methods: developed or implemented			
☐ I & E Plan			
☐ I & E Implementation Activities			
Other:			
C.4. Identify the Storm Water goals addressed (check all that apply)			
Reduce TSS			
Maintain infiltration	Comments:		
Control Peak Flow			
Protective Areas			
Control of Fueling & Maintenance Areas			
Remove Illicit Discharges			
Other:			
4. Satisfaction of Notice Require provide information for each notice in the t	ements. If cost sharing for this project able below.	was offered under a formal not	ice pursuant to chs. NR 151 or 243,
Notice Information			Notice Satisfaction Information
Chs. NR 151 or 243 Notice Type Issue Date	From (Name)	To (Name)	Satisfied? Yes No Date Letter Sent
	I		

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5. Additional Information. (Space will expand to fit your text.)				
See attached SLAMM Summary and Design Parameters for the % Removal TSS				
6. Summary of Project Challenges. (Space will expand to fit yo	our text.)			
The vegetation and plantings are a special installation and the typical landscapers that provide these services are not at the level needed to provide an excellent project without the services of an ecological professional. These BMP's also require a 3 year maintenance program in order fully establish the vegetation required. The funding program could look at taking that into account when providing funding for the construction with a higher % reimbursement during construction and allow the municipality to complete the remaining 2 years outside the grant period.				
7. Grantee Certification.				
Checking here 🛛 certifies that, to the best of your knowledge, the informal	tion contained in this report is correct			
Name of Authorized Representative (type or print) ψ	me of Authorized Representative (type or print) ↓ Title of Authorized Representative (type or print) ↓			
Aaron Oppenheimer	Administrator			
Signature of Authorized Representative Date 16/30/12				
8. For Departmental Use Only.				
Regional NPS Coordinator – Please complete the following:				
8.A. Check here if you have received the following from the project sponsor: one (1) printed, signed, original Final Report + attachments one (1) electronic version of Final Report. Send the printed, signed original Final Report with attachments + electronic version to the Community Financial Assistance Grants Manager. Community Financial Assistance will forward to Runoff Management Section Grants Coordinator. 8.B. Comments about this project:				
8.C. Type or print Name of Regional NPS Coordinator →				
8 D. Signature of Regional NPS Coordinator		8 F Date		

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- Urban Nonpoint Source & Storm Water Management Grant Program (ch. NR 155)

Page 6



Client's Name: Village of Bellevue

Project Name: Fire Lane Dr Stormwater Pond

Project No. USC-LF01-05106-11A

Photo No. Date: 10/12/11

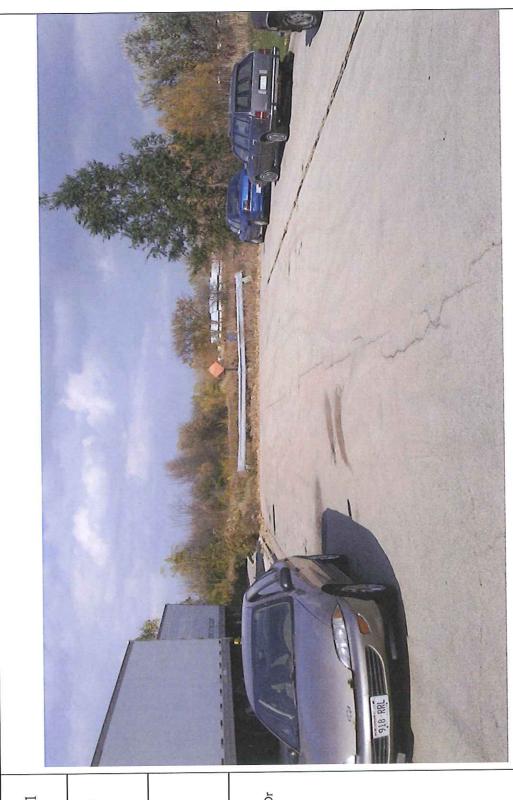
Direction Photo Taken
Looking North end of Fire Lane Dr

Photo Taken By:

Thad M

Pond Location at end of Fire Lane Dr

Description:





Project Name: Fire Lane Dr Stormwater Pond

Project No. USC-LF01-05106-11A

Client's Name: Village of Bellevue

Photo No. | D

Date: 10/12/11

Direction Photo Taken
Looking Northeast at end of Fire Lane
Dr

Photo Taken By:

Thad M

Description:
Pond Location at end of Fire Lane Dr





Client's Name: Village of Bellevue

Photographic Log

Project Name: Fire Lane Dr Stormwater Pond

Project No. USC-LF01-05106-11A

Date: 10/12/11 Photo No.

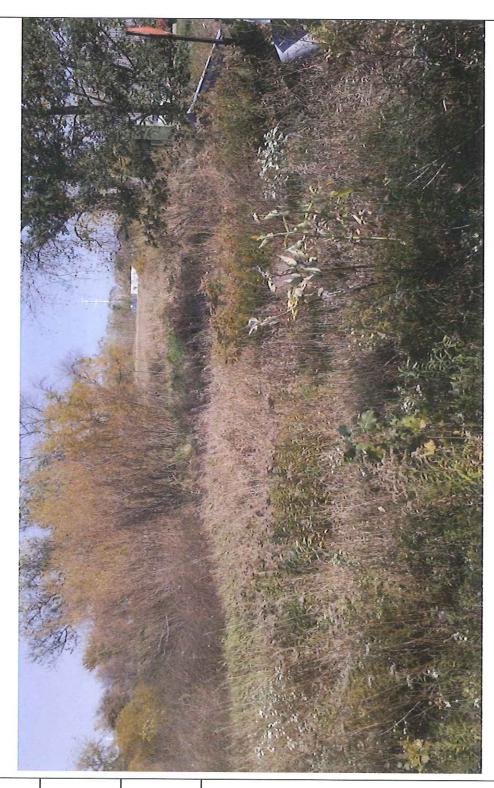
Direction Photo Taken Looking East

Photo Taken By:

Thad M

Description:

Pond Location at end of Fire Lane Dr



I:\Clients-GB_ Project-Files\10B020\UNPS Funding\Preconstruction Photos See 15000 Final Pictures\Photo Log Preconstruction Const Fire Lane Dr.doex



Client's Name: Village of Bellevue

Project Name: Fire Lane Dr Stormwater Pond

Project No. USC-LF01-05106-11A

Date: 10/25/12 Photo No.

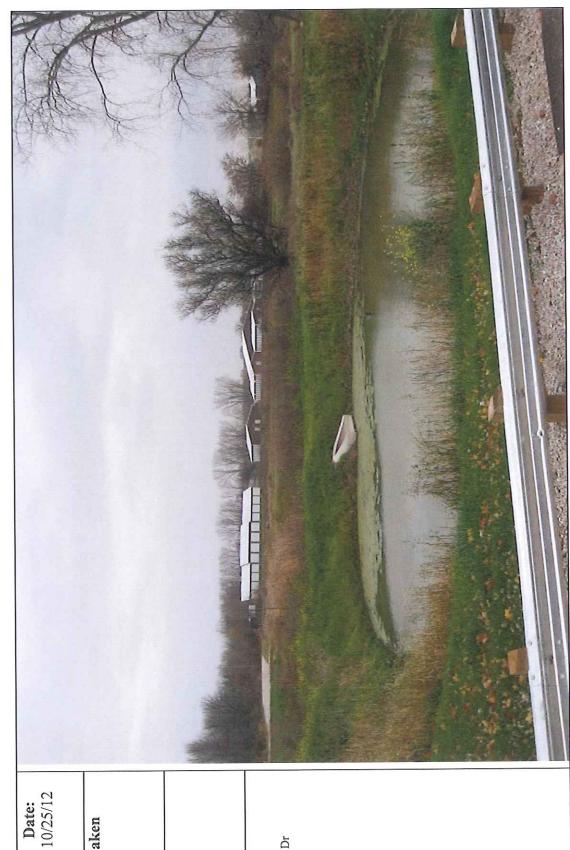
Direction Photo Taken Looking North

Photo Taken By:

Thad M

Description:

Pond at end of Fire Lane Dr





Client's Name: Village of Bellevue

Photographic Log

Project No. USC-LF01-05106-11A

Project Name: Fire Lane Dr Stormwater Pond

Date: 10/25/12 Photo No.

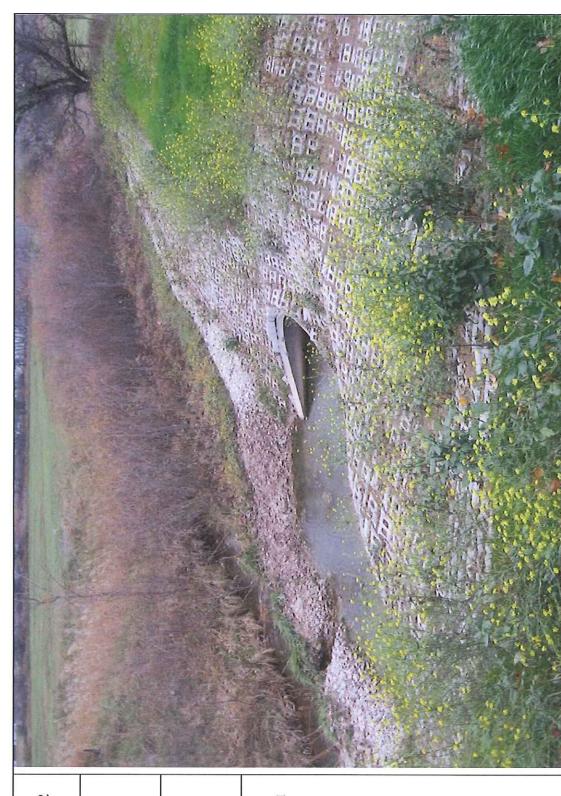
Direction Photo Taken Looking North

Photo Taken By:

Thad M

Description:

Pond at end of Fire Lane Dr – Outfall and Bank Protection





Client's Name: Village of Bellevue

Project Name: Fire Lane Dr Stormwater Pond

Project No. USC-LF01-05106-11A

vue Project Na

Photo No. Date: 10/25/12

Direction Photo Taken Looking Southeast

Photo Taken By:

Thad M

Description:

Pond at end of Fire Lane Dr



3-1-13

STORM WATER POND DESIGN NARRATIVE

COMMERCIAL WAY / FIRE LANE DRIVE BELLEVUE, WI

FEBRUARY 2012

PREPARED BY:

CEDAR CORPORATION 2737 S. RIDGE ROAD, SUITE #400 GREEN BAY, WI 54304

920-455-7001

INTRODUCTION:

This report contains information pertaining to the design of the Fire Lane Drive Storm Water Pond in the Village of Bellevue, Brown County, Wisconsin.

EXISTING CONDITIONS:

An existing storm sewer system on Commercial Way and Fire Lane Drive collects storm water runoff from a watershed approximately forty (40) acres in size (see <u>Appendix 1</u>) and conveys it west to an earthen swale approximately two-hundred (200) feet west of the intersection of the two roadways. The earthen swale conveys the storm water runoff west for approximately seven hundred (700) feet to Willow Creek. The earthen swale has a narrow bottom and steep side slopes and provides minimal storm water management benefits.

According to NRCS (see <u>Appendix 2</u>) the soils on the site are (in order of prevalence): Oshkosh Silty Clay Loam, Dresden Silt Loam, Manawa Silty Clay Loam, Oshkosh Silt Loam, Manistee Fine Sandy Loam and Sisson Silt Loam.

According to the Village's storm water planning documents (see <u>Appendix 3</u>), the W4.19 watershed, contains 6.8 acres of roof, 7.3 acres of paved parking, 2.1 acres of driveway, 2.8 acres of street, 1.8 acres of landscaping and 18.9 acres of turf grass.

A wetland delineation has determined that wetland exist along Willow Creek. A copy of the report is attached in <u>Appendix 4</u>.

Existing storm water management within the watershed currently includes on-site storm water management and street sweeping. Street sweeping is completed monthly by the Village using a regenerative air sweeper.

PROPOSED CONDITIONS:

The Village has proposed to construct a storm water pond near the intersection of Commercial Way and Fire Lane Drive to treat storm water runoff prior to discharge to Willow Creek.

The Village was originally considering a storm water pond located approximately five hundred (500) feet west of the intersection of the two roadways. Unfortunately, the Village was unable to obtain the necessary property and/or easements in this location. The Village is now proposing to construct a storm water pond approximately four hundred (400) feet north of the intersection of the two roadways (see <u>Appendix 5</u>). This area contains existing public right-of-way that was widened to accommodate a future culde-sac.

The revised pond location will require the installation of new storm sewer from the intersection of Commercial Way and Fire Lane Drive north along Fire Lane Drive to the storm water pond. A 29"x45" elliptical pipe has been selected based upon it's ability to convey the 5-year design storm to the pond and fit within the vertical constraints that exist on Fire Lane Drive.

The storm water pond will provide a five (5) foot deep permanent pool with a eight (8) foot wide safety shelf. The permanent pool elevation is 586.50. The side slopes below the safety shelf are 2:1 (horizontal:vertical). The pond bottom is 581.50. The permanent pool volume is approximatley 0.23 acre-feet. The storm water pond will provide a six and a half (6.5) foot deep active storage volume. The side slopes above the permanent pool are 3:1. The top of berm is 593.00. The active storage volume is approximately 0.96 acre-feet.

The HydroCAD model (version 10) was used to determine the appropriate size for the pond oulets (see <u>Appendix 6</u>). There are three outlets from the pond to Willow Creek: A small (6"-diameter PVC) pipe will maintain the permanent pool elevation while maximizing the detention time for small storm events (less than one inch of rainfall) at 586.5. A large (29"x45" elliptical RCP) pipe set one foot above the permanent pool, at 587.5, will convey regular flows. An armored overflow weir set four and a half (4.5) feet above the permanent pool, at 591.0, will convey large flows (greater than the 5 year design storm). During the 100-year storm event, the 6" PVC pipe will convey 1.8 CFS, the 29"x45" elliptical RCP pipe will convey 64.0 CFS and the overflow weir will convey 53.8 CFS for a total flow of approximatley 120 CFS. The peak elevation during the 100-year storm event is approximatley 592.0, which is one foot below the top of the berm.

Outlet protection and energy dissipation will be provided at the pipe discharge. The bottom will be virtually flat, ten (10) foot long by twelve (12) foot wide with 3:1 side slopes. The average velocity at the downstream end of the outlet protection will be 1.5 feet per second, as shown in <u>Appendix 7</u>, during the 2-year storm event, as required by WisDNR for discharge to a wetland.

The WinSLAMM model (version 9.4) was used to determine the Total Suspended Solids Removal efficiency of the proposed storm water pond. A five-year model run was used. Proposed modeling information has been attached in <u>Appendix 8</u> and is summarized below:

	Load	Removed	Discharged	Removal
	(lbs)	(lbs)	(lbs)	(%)
Watershed Controls	48698	28796 ¹	19902	59.1
Storm Water Pond	19902 ²	9598 ³	10304	48.2
Overall	48698 ⁴	38394 ⁵	10304 ⁶	78.87

Figure 1: Water Quality Calculations

PERMITTING:

The storm water pond is located directly adjacent to Willow Creek. In order to construct the storm water pond, the Village proposes to grade in excess of 10,000 square feet within the "regulatory bank" of a navigable waterway, construct an outfall greater than 24" in diameter and place armoring at the outfall location. Each of these actions triggers the need for a Chapter 30 permit. Due to the number of triggers, the Village will apply for an Individual Chapter 30 permit.

MAINTENANCE RECOMMENDATIONS:

In order to maintain their capacity and effectiveness, the storm sewers and storm water pond will require regular maintenance. We offer the following maintenance recommendations:

The storm sewers are proposed at a relatively low slope, therefore sediment or debris deposition can occur within the pipe. The storm sewers should be inspected periodically and any sediment and/or debris shall be monitored or removed.

The storm water pond side slopes shall be maintained regularly. Care should be taken due to the relatively steep side slopes. The outlets shall be inspected regularly and any debris shall be removed.

Removed by on-site storm water management facilities and street sweeping.

² From "Watershed Controls Discharged".

³ Removed by storm water pond.

⁴ From "Watershed Controls Load".

⁵ Sum of "Watershed Controls Removed" and "Storm Water Pond Removed".

⁶ From "Storm Water Pond Discharged".

⁷ "Overall Removal" is not cumulative of "Watershed Controls Removal" and "Storm Water Pond Removal" since those figures each have different basis points. "Overall Removal", however, can be verified with the following equation: $(59.1\%) + (100\% - 59.1\%) \times 48.2\% = 78.8\%$

The sediment deposition level shall be inspected yearly. When sediment reaches one-half of the dead storage depth, sediment shall be removed. Due to the size of storm water pond, we anticipate that sediment removal may be required every three to five years depending upon construction site erosion control and winter maintenance practices within the watershed. Removed sediment shall be disposed of in accordance with current regulations.

If/when the basin is dewatered for sediment removal, WisDNR limits the peak dewatering discharge rate to 50% of the 2-year storm event. For this project the 2-year storm event is approximately 38 CFS. Therefore the peak dewatering discharge rate is approximately 19 CFS. Since the permanent pool volume is 0.23 acre-feet the minimum dewatering time is:

0.23
$$ac - ft \times \frac{43560 cf}{1 ac - ft} \times \frac{1 sec}{19 cf} \times \frac{1 min}{60 sec} = 9$$
minutes
Figure 2: Minimum Dewatering Time

For permitting purposes, it may be advantageous to keep the discharge below 70 gallons per minute. The minimum dewatering time in that case would be:

0.23
$$ac - ft \times \frac{43560 cf}{1 ac - ft} \times \frac{minute}{70 \ gallons} \times \frac{1 \ gallon}{0.1337 \ cf} \times \frac{1 \ hour}{60 \ minutes} = 18 \ hours$$
Figure 2: Minimum Dewatering Time

We do not recommend piling snow within the permanent pool of the storm water pond. The snow piles may block flow during the spring thaw.

APPENDICIES:

- 1. Watershed Map
- 2. Soils
- 3. Watershed Land Use
- 4. Wetland Delineation
- 5. Plan Sheets
- 6. HydroCAD Modeling
- 7. 2-year Velocity HydroCAD model output
- 8. WinSLAMM Modeling

20120218_W4.19 Existing WITH FIRE LANE POND - Output Summary.txt

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Data file name: I:\Clients-GB\B4914 Bellevue Village of\036 C12 2012 Stormwater Ponds\12000 Design Data and Calcs\20120218_w4.19 Existing with Fire Lawe Pond.dat
Data file description: Village of Bellevue MS4 Stormwater Modeling - Existing Conditions Subbasin W4.19
Particulate Solids Concentration file name: C:\Program Files (X86)\WinsLaMm\wil Date of run: 02-28-2012 Total Area Modeled (acres)

Percent Particulate Solids Reduction	13.73% 59.13% 78.84%
Particulate Solids Par Yield (1bs)	48698 119902 10302 20302 20304
Particulate Solids Conc. (mg/L)	184.9 159.5 127.6 66.05
Percent Runoff Volume Reduction	0.00% 40.75% 40.75%
Runoff Volume (cu ft)	4.218E+06 4.218E+06 2.499E+06 2.499E+06 500085
	Controls: em: n: ls: fall Controls:

Annualized Total After Outf

ota] ota]

